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CHAPTER 1
INTRODUCTION

This Optoswitch transmission unit provides up to (2) factoryset level detectors and consists of a transmitter and a receiver. Designed to be mounted behind the Magnetel dial or on a 7290 serie gauge, the transmitter consists of an explosion proof Exd IIBT6, IP65 aluminium housing including up 2 opto-electronic switches and 2 powerful magnets mounted on the supporting shaft of the switch paddle. This arrangement allows to maintain the direct reading on the tank. The transmitter is supplied with its cablegland and with a 2m double insulated, shielded 3x0.75mm² or 4x0.75mm² (IiYC-OB) cable (depending on the model). The transmitter signal is processed by the receiver "Securyfill II" which incorporates the output relays.

1.1 Receiver - General Data

Receiver is enclosed in a ABS box (45x75x105mm) to be mounted on DIN rail. Output on volt free inverters 250Vac-3A. Relays are deenergised when level setpoints are reached (below or above as required). Status of relays shown by Led (Led glows when associated level setpoint is reached). Receiver to be installed in control room outside Ex area or to be mounted in a explosion proof Eexd enclosure with adequate ventilation.

- Connections : screw terminals 2.5mm²
- Input voltage : (specify on order) 24Vac/50-60Hz, 24Vdc or Universal « 100-240Vac/50-60Hz »
- Power rate : ± 1.2VA

1.2 Receiver identification label

ROCHESTER Gauges
Avenue Lavoisier, 6
B1300 Wavre Belgium
DO NOT OPEN !

SECURYFILL 2

Type n° : 6350S02216E
Relay output : 250Vac-30Vdc / 3A
Power input : 100 to 240Vac 50/60Hz / 2.5W
Fuse Protect : 250mA (TRS soldered)
Batch number : 15.---

A : ID number (see page 4)
B : Power on each Relay Output
C : Receiver power supply
D : Value of protection Fuse (not replacement)
E : Receiver production batch number
   (yy.xxx : yy=year and xxx= running no.)
1.3 ID code structure

```
6 3 50 S * 2 * 1 * E
```

- **Output Contact**
  - 111 One relay inverter
  - 216 Two relays inverters

- **Power supply**
  - 0 100 to 240Vac / 50-60Hz
  - 3 24Vdc*10%
  - 4 24Vac*10% / 50-60Hz

1.4 Receiver with One output contact - Truth Tables

### Connecting to a Transmitter with one « MIN » Set-point

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Levels (L)</th>
<th>Leds</th>
<th>Relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>X</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>L &gt; A</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>L ≤ A</td>
<td>ON</td>
<td>ON</td>
</tr>
</tbody>
</table>

### Connecting to a Transmitter with one « MAX » Set-point

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Levels (L)</th>
<th>Leds</th>
<th>Relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>X</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>L &lt; A</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>L ≥ A</td>
<td>ON</td>
<td>ON</td>
</tr>
</tbody>
</table>

1.5 Receiver with Two output contacts - Truth Tables

### Connecting to a Transmitter with two « MIN » Set-points

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Levels (L)</th>
<th>Leds</th>
<th>Relays</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>X</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>L &gt; A</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>B &lt; L ≤ A</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>ON</td>
<td>L ≤ B</td>
<td>ON</td>
<td>OFF</td>
</tr>
</tbody>
</table>

### Connecting to a Transmitter with one « MIN » and one « MAX » Set-points

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Levels (L)</th>
<th>Leds</th>
<th>Relays</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>X</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>B &lt; L &lt; A</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>L ≥ A</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>ON</td>
<td>L ≥ B</td>
<td>ON</td>
<td>ON</td>
</tr>
</tbody>
</table>

### Connecting to a Transmitter with two « MAX » Set-points

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>Levels (L)</th>
<th>Leds</th>
<th>Relays</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>X</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>L &lt; B</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>L ≥ A</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>B ≤ L &lt; A</td>
<td>OFF</td>
<td>ON</td>
</tr>
</tbody>
</table>
1.6 Block diagrams

With one output contact

With two output contacts
CHAPTER 2
CONNECTION / WIRING

Note: ____________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
2.1 General Instructions for connection to a optoswitch transmitter

**Connected to earth with 4mm² VOBst**

**ALWAYS break the shielded line!**

**Total line length between transmitter and receiver MAXIMUM 300m**

**Output for set-point relay**
To control alarm, solenoid valve, power relay, indicator lights, etc.

- **C**: Common
- **NC**: Normally closed
- **NO**: Normally open

**Contact A**

**Contact B**

**Shielded**

**LiYCY-OB 4x0.75² (DIN47100)**

**Shielded**

**LiYCY-OB 3x0.75² (DIN47100)**

**Total line length between transmitter and receiver MAXIMUM 300m**

**Power supply**
- **24Vdc (±10%)**
- **100 to 240Vac, 50/60 Hz**
2.2 Typical Installation (Two Levels set-points & One Extra Filling Warning)

**TERMINAL NUMBERS**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Local Ground</td>
<td>11 - Common</td>
</tr>
<tr>
<td>2</td>
<td>Not used</td>
<td>12 - NC</td>
</tr>
<tr>
<td>3</td>
<td>Not used</td>
<td>13 - NO</td>
</tr>
<tr>
<td>4</td>
<td>Shield</td>
<td>14 - Common</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>15 - NC</td>
</tr>
<tr>
<td>6</td>
<td>Vcc</td>
<td>16 - NO</td>
</tr>
<tr>
<td>7</td>
<td>A contact</td>
<td>17 - N (Vac) or GND</td>
</tr>
<tr>
<td>8</td>
<td>A contact</td>
<td>18 - L1 (Vac) or Vcc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power Supply (*)</td>
</tr>
<tr>
<td>(*)</td>
<td>Depend on model</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(different power supply)</td>
<td></td>
</tr>
</tbody>
</table>

Note:
Output contacts are show in powered position.
They change over when correspondent level is reached or overached or when power drops down.
LiYCY-OB 0.75 mm²  
CABLE DATA SHEET

Multi-core cables shielded by a synthetic material with extra-flexible multi-strand conductors twisted in layers, with electromagnetic protection (CY shielding: tinned copper braid) 
These cables are manufactured in accordance with DIN 47100. The cores are counted starting from the outer layer, towards the centre.

**Temperature range:**
- Installation and service: -20°C à +80°C
- Transport and storage: -30°C à +80°C

**Use:**
Shielded connecting cables used for the transmission of signals, measuring, controls, telephony, interphone systems and for applications in the electrical industry.

**LiYCY-OB standards:**
Manufactured in accordance with standards VDE 0295, 0250, 0271, 0812, 0814, 0817. 
In accordance with CEI 20-35/IEC 332.1 and CEI 20-22/IEC 332.3 Cat. C, lead-free CEI 20-52

Nominal section: 0.75mm²  
Conductor diameter: 2.2mm  
No. strands: 24 x 0.22 mm in diameter

**Cable Description:**
- Core: multi-strand, red copper  
- Insulation: coloured PVC in accordance with DIN 47100, 105°C PVC  
- Twisted: by layer  
- Assembly: by mylar sheet  
- Screening: tinned copper braid (90% density)  
- Outer sheath: RAL 7001 grey PVC, flame-retardant NPI CEI 20-22

**Cable specifications:**
- Bending radius: 10 x cable diameter  
- Insulation resistance: minimum 20MΩ/Km  
- Operating voltage: 500V  
- Test voltage: minimum de 1.200V (1.2KV)

**Electrical properties at 25°C:**
- Conductor resistance: maximum 26Ω/Km  
- Capacitance between 2 conductors: 130pF/m at 800Hz frequency  
- capacitance entre cond. & shield: 230pF/m  
- Load: maximum 13 A

**Mechanical properties:**
<table>
<thead>
<tr>
<th>Number of conductors</th>
<th>diameter extérieur [mm]</th>
<th>weight [Kg/Km]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x 0.75</td>
<td>6.0</td>
<td>57.0</td>
</tr>
<tr>
<td>3 x 0.75</td>
<td>6.2</td>
<td>66.0</td>
</tr>
<tr>
<td>4 x 0.75</td>
<td>8.0</td>
<td>87.0</td>
</tr>
<tr>
<td>6 x 0.75</td>
<td>8.6</td>
<td>125.0</td>
</tr>
</tbody>
</table>

**Colour standard DIN 47100:**

<table>
<thead>
<tr>
<th>Conductor number</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>white</td>
</tr>
<tr>
<td>2</td>
<td>brown</td>
</tr>
<tr>
<td>3</td>
<td>green</td>
</tr>
<tr>
<td>4</td>
<td>yellow</td>
</tr>
<tr>
<td>5</td>
<td>grey</td>
</tr>
<tr>
<td>6</td>
<td>pink</td>
</tr>
</tbody>
</table>

Source: Valentin catalogue (0.75mm² part specification)  
Legend electrical catalogue (part standard DIN 47100)
CONFORMITY DECLARATION

Wavre, 15 July 2015

I, PIERRE Lionel, Managing Director

ROCHESTER Gauges International S.A.
Zone Industriel Nord
Avenue Lavoisier, 6
B-1300 Wavre BELGIUM

hereby certify that the receiver
SECURYFILL II
bearing the following details:

6 3 5 0 S * 2 * 1 * E

Output Contact
111 One relay inveter
216 Two relays inverters

Power supply
0 100 to 240Vac / 50-60Hz
3 24Vdc ±10%
4 24Vac ±10% / 50-60Hz

conforms to the various European Directives currently in force, that is:

Directive 2004/108/CE EMC, standards EN 61000-4 and EN 55022 (class B) with limits required by :.
EN 61000-4-1 (2007)
EN 61000-4-2 (2009)
EN 61000-4-5 (2006)
EN 61000-4-6 (2009)

Directive 2006/95/CE Low Voltage, standards EN 60950 and EN 50116.

PIERRE Lionel
Managing Director
RoHS DECLARATION

Wavre, 22 September 2014

I, PIERRE Lionel, Managing Director

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Zone Industriel Nord
Avenue Lavoisier, 6
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<tr>
<td></td>
<td>4 24Vac±10% / 50-60Hz</td>
</tr>
</tbody>
</table>

conforms to the various European Directives currently in force, that is:

Directive 2011/65/EC RoHS.
Directive 143/2011 REACH.

PIERRE Lionel
Managing Director

6 3 5 0 S * 2 * 1 * E

Receiver SECURYFILL II

MADE IN EUROPE